SEQUENCE LISTING

<110> You, Jun
       IIDA, Akihiro
       Hasegawa, Mamoru

<120> Minus Strand RNA Virus Vector Carrying Gene Modified In High
       Mutation Region

<130> 50026/057001

<150> PCT/JP04/009617
<151> 2004-06-30

<150> JP 2003-187312
<151> 2003-06-30

<160> 110

<170> PatentIn version 3.3

<210> 1
<211> 10
<212> DNA
<213> Artificial

<220>
<223> a mutagenic sequence for minus strand RNA virus

<400> 1
agaaaaacyy   10

<210> 2
<211> 11
<212> DNA
<213> Artificial

<220>
<223> a mutagenic sequence for minus strand RNA viruses

<400> 2
agaaaaaacy y   11

<210> 3
<211> 10
<212> DNA
<213> Artificial

<220>
<223> a mutagenic sequence for minus strand RNA viruses

<400> 3
agaaaaactt   10

```
<210>   4
<211>   11
<212>   DNA
<213>   Artificial

<220>
<223>   a mutagenic sequence for minus strand RNA viruses

<400>   4
agaaaaaact t                                                        11


<210>   5
<211>   12
<212>   DNA
<213>   Artificial

<220>
<223>   an example of E sequence of Sendai virus


<220>
<221>   misc_feature
<222>   (2)..(2)
<223>   "n" at location 2 stands for any of a, g, c, or t

<400>   5
antaagaaaa ac                                                       12


<210>   6
<211>   10
<212>   RNA
<213>   Artificial

<220>
<223>   an example of S sequence of Sendai virus

<400>   6
cwuuvwcccu                                                          10


<210>   7
<211>   10
<212>   RNA
<213>   Artificial

<220>
<223>   an example of S sequence of Sendai virus

<400>   7
cuuugacccu                                                          10


<210>   8
<211>   10
<212>   RNA
```

<213> Artificial

<220>
<223> an example of S sequence of Sendai virus

<400> 8
cauucacccu   10

<210> 9
<211> 10
<212> RNA
<213> Artificial

<220>
<223> an example of S sequence of Sendai virus

<400> 9
cuuucacccu   10

<210> 10
<211> 10
<212> DNA
<213> Artificial

<220>
<223> an example of S sequence of Sendai virus

<400> 10
agggtcaaag   10

<210> 11
<211> 10
<212> DNA
<213> Artificial

<220>
<223> an example of S sequence of Sendai virus

<400> 11
agggtgaatg   10

<210> 12
<211> 10
<212> DNA
<213> Artificial

<220>
<223> an example of S sequence of Sendai virus

<400> 12
agggtgaaag   10

```
<210>   13
<211>   9
<212>   RNA
<213>   Artificial

<220>
<223>   an example of E sequence of Sendai virus

<400>   13
uuuuucuua                                                                    9


<210>   14
<211>   9
<212>   DNA
<213>   Artificial

<220>
<223>   an example of E sequence of Sendai virus

<400>   14
taagaaaaa                                                                    9


<210>   15
<211>   10
<212>   DNA
<213>   Artificial

<220>
<223>   an example of S sequence of Sendai virus

<400>   15
ctttcaccct                                                                  10


<210>   16
<211>   15
<212>   DNA
<213>   Artificial

<220>
<223>   an example of E sequence of Sendai virus

<400>   16
tttttcttac tacgg                                                            15


<210>   17
<211>   18
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized linker sequence

<400>   17
```

atgcatgccg gcagatga   18

<210> 18
<211> 18
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 18
gttgagtact gcaagagc   18

<210> 19
<211> 42
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 19
tttgccggca tgcatgtttc ccaaggggag agttttgcaa cc   42

<210> 20
<211> 18
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 20
atgcatgccg gcagatga   18

<210> 21
<211> 21
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 21
tgggtgaatg agagaatcag c   21

<210> 22
<211> 51
<212> DNA
<213> Artificial

<220>

5

<223> an artificially synthesized primer sequence

<400> 22
acttgcggcc gccaaagttc aatgcagagg tcgcctctgg aaaaggccag c   51

<210> 23
<211> 76
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 23
atccgcggcc gcgatgaact ttcaccctaa gtttttctta ctacggctaa agccttgtat   60

cttgcacctc ttcttc   76

<210> 24
<211> 24
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 24
tcacgcggcc gccaaagttc aatg   24

<210> 25
<211> 24
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 25
atctgcggcc gcgatgaact ttca   24

<210> 26
<211> 24
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 26
taacaatagg aagacctcta atgg   24

<210> 27

6

```
<211>  24
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  27
ccattagagg tcttcctatt gtta                                              24


<210>  28
<211>  24
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  28
aacatttagg aagaatttgg atcc                                             24


<210>  29
<211>  24
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  29
ggatccaaat tcttcctaaa tgtt                                             24


<210>  30
<211>  22
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  30
cggtgaggag gactgttcga gc                                               22


<210>  31
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  31
cagttcagtc aagtttgcct                                                  20
```

```
<210>   32
<211>   19
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence

<400>   32
cgaccaattt agtgcagaa                                                   19


<210>   33
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence

<400>   33
ttcccttcat cgactatgac c                                                21


<210>   34
<211>   24
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence

<400>   34
atgcagaggt cgcctctgga aaag                                             24


<210>   35
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence

<400>   35
cacattggaa tgcagatgag a                                                21


<210>   36
<211>   20
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence
```

```
<400>  36
tatctgtgct tccctatgca                                           20


<210>  37
<211>  19
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  37
gcacagtgga agaatttca                                            19


<210>  38
<211>  19
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  38
ggagtgcctt tttgatgat                                            19


<210>  39
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  39
ggatgacctt ctgcctctta                                           20


<210>  40
<211>  21
<212>  DNA
<213>  Artificial

<220>
<223>  an artificially synthesized primer sequence

<400>  40
ggatagcttg atgcgatctg t                                         21


<210>  41
<211>  20
<212>  DNA
<213>  Artificial
```

<220>
<223> an artificially synthesized primer sequence

<400> 41
ggaaagttgc agatgaggtt   20

<210> 42
<211> 24
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 42
ctaaagcctt gtatcttgca cctc   24

<210> 43
<211> 20
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 43
acctcatctg caactttcca   20

<210> 44
<211> 19
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 44
catggctaaa gtcaggata   19

<210> 45
<211> 19
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized primer sequence

<400> 45
tctattaaga atcccacct   19

<210> 46

```
<211>   20
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence

<400>   46
gtctggctgt agattttgga                                               20


<210>   47
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence

<400>   47
tgaagtcttg cctgctccag t                                             21


<210>   48
<211>   24
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence

<400>   48
agtatctcac ataggctgcc ttcc                                          24


<210>   49
<211>   20
<212>   DNA
<213>   Artificial

<220>
<223>   an artificially synthesized primer sequence

<400>   49
ggagcagtgt cctcacaata                                               20


<210>   50
<211>   14
<212>   DNA
<213>   Homo sapiens

<400>   50
caatagaaaa actt                                                     14


<210>   51
```

11

```
<211>  14
<212>  DNA
<213>  Homo sapiens

<400>  51
caataggaaa actt                                                    14


<210>  52
<211>  15
<212>  DNA
<213>  Homo sapiens

<400>  52
atttagaaaa aactt                                                   15


<210>  53
<211>  15
<212>  DNA
<213>  Homo sapiens

<400>  53
atttaggaga acctt                                                   15


<210>  54
<211>  14
<212>  DNA
<213>  Sendai virus

<400>  54
agtaagaaaa actt                                                    14


<210>  55
<211>  14
<212>  DNA
<213>  Sendai virus

<400>  55
attaagaaaa actt                                                    14


<210>  56
<211>  14
<212>  DNA
<213>  Sendai virus

<400>  56
aataagaaaa actt                                                    14


<210>  57
<211>  14
<212>  DNA
<213>  Artificial
```

```
<220>
<223>  an altered human CFTR gene (region around the position 1257)

<400>  57
caataggaag acgt                                                    14


<210>  58
<211>  15
<212>  DNA
<213>  Artificial

<220>
<223>  an altered human CFTR gene (region around the position 3905)

<400>  58
atttaggaag aattt                                                   15


<210>  59
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of an E sequence


<220>
<221>  misc_feature
<222>  (10)..(10)
<223>  "n" at location 10 stands for any of a, g, c, or u

<400>  59
uuuuucuuan u                                                       11


<210>  60
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  60
uuuuubwyww u                                                       11


<210>  61
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence
```

```
<400>  61
uuuuucuuau u                                                              11


<210>  62
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  62
uuuuugauua u                                                             11


<210>  63
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  63
uuuuuuauaa u                                                             11


<210>  64
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  64
uuuuuuauau u                                                             11


<210>  65
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  65
uuuuugucua u                                                             11


<210>  66
<211>  11
<212>  RNA
<213>  Artificial
```

```
<220>
<223>  an example of E sequence


<220>
<221>  misc_feature
<222>  (5)..(5)
<223>  n = a, t, c, or g

<400>  66
uuuunhwuar y                                                          11


<210>  67
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  67
uuuuuuauaa c                                                          11


<210>  68
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  68
uuuuguuuag u                                                          11


<210>  69
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  69
uuuuaauuaa c                                                          11


<210>  70
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence
```

```
<400>  70
uuuuucuuaa u                                                                     11


<210>  71
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  71
uuuucuuuaa u                                                                     11


<210>  72
<211>  10
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  72
uuuuuykaaw                                                                       10


<210>  73
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  73
uuuuuuguaa a                                                                     11


<210>  74
<211>  10
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  74
uuuuwwwkwa                                                                       10


<210>  75
<211>  10
<212>  RNA
<213>  Artificial
```

```
<220>
<223>  an example of E sequence

<400>  75
uuuuauauua                                                          10


<210>  76
<211>  10
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  76
uuuuaaauua                                                          10


<210>  77
<211>  10
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  77
uuuuuuauua                                                          10


<210>  78
<211>  10
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  78
uuuuuuugua                                                          10


<210>  79
<211>  10
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  79
uuuuuaauua                                                          10


<210>  80
```

```
<211>   10
<212>   RNA
<213>   Artificial

<220>
<223>   an example of E sequence

<400>   80
uuuuuaagua                                                          10


<210>   81
<211>   10
<212>   RNA
<213>   Artificial

<220>
<223>   an example of E sequence

<400>   81
uuuuauauaa                                                          10


<210>   82
<211>   10
<212>   RNA
<213>   Artificial

<220>
<223>   an example of E sequence

<400>   82
uuuuaaauaa                                                          10


<210>   83
<211>   10
<212>   RNA
<213>   Artificial

<220>
<223>   an example of E sequence

<400>   83
uuuuuaauaa                                                          10


<210>   84
<211>   10
<212>   RNA
<213>   Artificial

<220>
<223>   an example of E sequence

<400>   84
uuuucuwwra                                                          10
```

```
<210>    85
<211>    11
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence

<400>    85
uuuuucuwwr a                                                          11


<210>    86
<211>    12
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence

<400>    86
uuuuuucuww ra                                                         12


<210>    87
<211>    13
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence

<400>    87
uuuuuuucuw wra                                                        13


<210>    88
<211>    10
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence

<400>    88
uuuucuauga                                                            10


<210>    89
<211>    11
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence
```

```
<400>  89
uuuuucuaug a                                              11


<210>  90
<211>  12
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  90
uuuuuucuau ga                                             12


<210>  91
<211>  13
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  91
uuuuuuucua uga                                            13


<210>  92
<211>  10
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  92
uuuucuuaaa                                                10


<210>  93
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  93
uuuuucuuaa a                                              11


<210>  94
<211>  12
<212>  RNA
<213>  Artificial
```

```
<220>
<223>  an example of E sequence

<400>  94
uuuuuucuua aa                                                    12


<210>  95
<211>  13
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  95
uuuuuuucuu aaa                                                   13


<210>  96
<211>  10
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  96
uuuuuucuwa                                                       10


<210>  97
<211>  11
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  97
uuuuuuucau a                                                     11


<210>  98
<211>  13
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  98
uuuuuuucwh rwy                                                   13


<210>  99
```

```
<211>  13
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  99
uuuuuuucau gau                                                    13


<210>  100
<211>  13
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  100
uuuuuuucau guu                                                    13


<210>  101
<211>  13
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  101
uuuuuuucac auc                                                    13


<210>  102
<211>  13
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  102
uuuuuuucuc gac                                                    13


<210>  103
<211>  13
<212>  RNA
<213>  Artificial

<220>
<223>  an example of E sequence

<400>  103
uuuuuuucaa gau                                                    13
```

```
<210>    104
<211>    13
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence

<400>    104
uuuuuuusur ucu                                                                    13


<210>    105
<211>    13
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence

<400>    105
uuuuuuucua ucu                                                                    13


<210>    106
<211>    13
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence

<400>    106
uuuuuuucug ucu                                                                    13


<210>    107
<211>    13
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence

<400>    107
uuuuuuugua ucu                                                                    13


<210>    108
<211>    13
<212>    RNA
<213>    Artificial

<220>
<223>    an example of E sequence
```

<400> 108
uuuuuuucwa ucu   13

<210> 109
<211> 13
<212> RNA
<213> Artificial

<220>
<223> an example of E sequence

<400> 109
uuuuuuucur ucu   13

<210> 110
<211> 11
<212> RNA
<213> Artificial

<220>
<223> an example of E sequence

<400> 110
uuuuucuuam u   11